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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/645,065	08/21/2003	Kenichi Yokouchi	P/2699-30	6981
2352 7590 02/06/2007 OSTROLENK FABER GERB & SOFFEN 1180 AVENUE OF THE AMERICAS NEW YORK, NY 100368403			EXAMINER MACARTHUR, SYLVIA	
			ART UNIT	PAPER NUMBER
			1763	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/06/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/645,065	<b>Applicant(s)</b> YOKOUCHI ET AL.	
	<b>Examiner</b> Sylvia R. MacArthur	<b>Art Unit</b> 1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 January 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-30, 40-46, 49-58 and 61-64 is/are pending in the application.
- 4a) Of the above claim(s) 9, 10, 12-16, 20, 21, 24, 40-46 and 49-58 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8, 11, 17-19, 22, 23, 25-30, and 61-64 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>12-26/2006</u> | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments, see the letter, filed 1/10/2007, with respect to claims 61-64 have been fully considered and are persuasive. The finality of the previous rejection mailed 7/14/2006 has been withdrawn. It was noted that claims 61-64 were inadvertently omitted from the previous rejection and are addressed below.

Claims 61-64 are based upon a recitation that the annular member is continuous. Note that the examiner interpretation of annular is ring shaped and ring is interpreted as to encircle, to surround, or arranged with a vacant circular center. Note that the term continuous can be interpreted two ways 1) forming a ring that is in the shape of a continuous circle see prior art of JP 7-122529 as an example or 2) a ring formed by a continuous pattern see JP 11-330031 as an example.

Applicant's arguments filed 11/14/2006 have been fully considered but they are not persuasive. Applicant argues that Katsuhiko does not have an annular member with an inner periphery, however elements 4 and 6 anticipate an annular member wherein 4b and 6a are inner peripheries. The slit between 4 and 6 anticipate a processing width to process the wafer. Upon review of Figs. 8 and 9 it is noted that processing fluid is supplied to the wafer via inlets 130 and 140. The dispersion of the processing fluid from the center of the wafer to the edge of the wafer on both sides of the wafer ensures that the space between the annular members will be processed and allows for flow of fluid around the periphery.

### ***Claim Rejections - 35 USC § 102***

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2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-8, 11, 17-19, 22, 23, 25-30, and 61-64 are rejected under 35 U.S.C. 102(b) as being anticipated by Miya Katsuhiko et al (JP 11-330031).

Katsuhiko et al teaches a substrate processor.

Regarding claim 1: A substrate processing apparatus that removes an unwanted material on a surface of a peripheral portion of a substrate through etching by supplying etching liquid to the surface of the peripheral portion, the apparatus comprising:

an etching liquid supplying mechanism (48, 68) that supplies the etching liquid to the peripheral portion of the substrate; and an annular member (4,6 and 120) that has an inner periphery on or inside an outer periphery of the substrate and thereby defines a

processing width to be processed by the etching liquid on the surface of the peripheral portion of the substrate.

Regarding claim 2: The substrate processing apparatus according to claim 1

wherein: the annular member is placed in close proximity to the

surface of the peripheral portion of the substrate while securing a certain gap such that allows the annular member to come in contact with a liquid film of the etching liquid formed on the surface of the peripheral portion via the slit between members 4 and 6, See Figs. 1, 2,5, and 6 of

Katsuhiko et al.

Regarding claim 3: The substrate processing apparatus according to Claim 1

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further comprising: substrate holding mechanism (base plate 60) that holds the substrate from one surface side thereof, wherein the annular member 4 is placed on the other surface side of the substrate.

Regarding claim 4: The substrate processing apparatus according to Claim

1, wherein: the etching liquid is supplied to the peripheral portion of the substrate from the etching liquid supplying mechanism while the substrate is held rest. The apparatus of Katshiko et al is inherently capable of supplying etching liquid while the substrate is not rotating. This is also seen as a process limitation and is not given patentable weight.

Regarding claim 5: The substrate processing apparatus according to Claim

1, wherein the substrate W is a substrate of a nearly circular shape; the apparatus further comprises a substrate rotating mechanism that rotates the substrate; and the inner periphery of the annular member is of a circular shape having an inside diameter equal to smaller than a diameter of the substrate. See Figs. 1,2,5, and 6 of Katsuhiko et al.

Regarding claim 6: The substrate processing apparatus according to Claim 5, wherein: the etching liquid is supplied to the peripheral portion of the substrate from the etching liquid supplying mechanism while the substrate rotated by the substrate rotating mechanism, see abstract.

Regarding claim 7: The substrate processing apparatus according to Claim 1 wherein: the annular member 4,6 includes a substrate-opposing surface that extends outwards from the inner periphery and opposes the surface of the peripheral portion of the substrate .

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Regarding claim 8: The substrate processing apparatus according to Claim 7 wherein: the substrate-opposing surface is a plane nearly parallel the surface of the peripheral portion of the substrate, see Figs. 1,2,5, and 6.

Regarding claim 9: The substrate processing apparatus according to Claim 7 wherein: the substrate-opposing surface is an inclined plane inclined to reduce an interval between the substrate-opposing surface and the substrate as heading toward the inner periphery, see Fig.6.

Regarding claim 10: The substrate processing apparatus according to Claim 7, wherein: an outer periphery of the substrate-opposing surface is located outside the outer periphery of the substrate, see Figs. 1,2,5, and 6.

Regarding claim 11: The substrate processing apparatus according to Claim 7, wherein: the annular member includes a projection that protrudes from the substrate-opposing surface toward the substrate and thereby limits the etching liquid heading toward an inside of the substrate, see Fig. 6.

Regarding claim 17: Claim 1, wherein: the etching liquid supplying mechanism includes a nozzle 48 that supplies the etching liquid toward a surface of the substrate on an opposite side to a surface containing the surface of the peripheral portion.

Regarding claim 18: The substrate processing the nozzle supplies the etching liquid toward a central portion of the surface on the opposite side, see Fig. 6.

Regarding claim 19: The substrate processing apparatus according claim 1, wherein: the annular member has an outer wall surface positioned inside the outer periphery of the substrate, see Fig. 6.

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Regarding claim 22: The substrate processing claim 1, wherein: apparatus according to the etching liquid supplying mechanism includes a dispense port 47 through which the etching liquid is dispensed direction perpendicular to a surface of the substrate direction inclined toward an outside of the substrate.

Regarding claim 23: The substrate processing claim 1, wherein: apparatus according the annular member includes an inner wall surface that in a direction to go away from rises from the inner periphery surface of the substrate, see Fig. 6.

Regarding claim 25: The substrate processing apparatus according to claim 1, further comprising a lid member (plate 40) that substantially clogs an internal space of the annular member.

Regarding claim 26: The substrate processing apparatus according to claim 25 wherein; the annular member includes an annular groove formed adjacently inside the inner periphery, see Fig. 6.

Regarding claim 27: The substrate processing apparatus according to claim 1, further comprising: a gas supplying mechanism that supplies an internal space the annular member with a gas, see Fig. 1

Regarding claim 28: The substrate processing apparatus according to claim 27, wherein the annular member includes an inner wall surface that rises from the inner periphery in a direction to go away from a surface of the substrate, and the gas supplied from the gas supplying mechanism is supplied toward the inner wall surface, see [0063].

Regarding claim 29: The substrate processing apparatus according to claim 23,

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the annular member includes a gas flowing path that allows a communication between an internal space and an external space of the annular member, see [0063].

Regarding claim 30: The substrate processing apparatus according to claim 1 further comprising: a protection liquid etching protection liquid toward a center of the substrate an inner side of the annular member. supplying mechanism that supplies etching protection liquid toward a center a center of the substrate at an inner side of the annular member, see Fig. 1,2,5, and 6.

Regarding claim 61: The examiner has noted a recitation that the annular member is continuous, but fails to recite how the member is continuous. Upon giving the claim the broadest interpretation, it is noted that the annular member of Katsuhiko provides elements 4,6, and 120, see Figs. 2,3,5, and 7 that form a ring as they are arranged in a continuous manner to encircle the wafer.

Regarding claims 62-64: The inner periphery is disposed inside the outer periphery of the substrate see the location of the annular member 4,6, and/or 120 relative to the substrate in Figs. 5 and 7.

6.. Claims 1-8, 11, 17-19, 22, 23, 25,27, 30, and 61-64 are rejected under 35 U.S.C. 102(b) as being anticipated by Saisu Koichi et al (JP 07-122529, as presented in the IDS mailed 12/26/2006).

Koichi et al teaches a sealed spin etching system for semiconductors.

Regarding claim 1: A substrate processing apparatus that removes an unwanted material on a surface of a peripheral portion of a substrate through etching by supplying etching liquid to the surface of the peripheral portion, the apparatus comprising:



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an etching liquid supplying mechanism (nozzles 12a-d and nozzles 13a-d) that supplies the etching liquid to the peripheral portion of the substrate; and an annular member (seal ring 20) that has an inner periphery on or inside an outer periphery of the substrate and thereby defines a processing width to be processed by the etching liquid on the surface of the peripheral portion of the substrate, see Figs. 1,4, and 7.

Regarding claim 2: The substrate processing apparatus according to claim 1 wherein: the annular member 20 is placed in close proximity to the surface of the peripheral portion of the substrate while securing a certain gap such that allows the annular member to come in contact with a liquid film of the etching liquid formed on the surface of the peripheral portion, see Figs. 1,4, and 7 of Koichi et al.

Regarding claim 3: The substrate processing apparatus according to Claim 1 further comprising: substrate holding mechanism (work holder 10) that holds the substrate from one surface side thereof, wherein the annular member 20 is placed on the other surface side of the substrate.

Regarding claim 4: The substrate processing apparatus according to Claim1, wherein: the etching liquid is supplied to the peripheral portion of the substrate from the etching liquid supplying mechanism while the substrate is held rest. The apparatus of Koichi et al is inherently capable of supplying etching liquid while the substrate is not rotating. This is also seen as a process limitation and is not given patentable weight.

Regarding claim 5: The substrate processing apparatus according to Claim 1, wherein the substrate W is a substrate of a nearly circular shape; the apparatus further comprises a substrate rotating mechanism that rotates the substrate; and the inner periphery of

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the annular member is of a circular shape having an inside diameter equal to smaller than a diameter of the substrate. See Fig. 7 of Koichi et al.

Regarding claim 6: The substrate processing apparatus according to Claim 5, wherein: the etching liquid is supplied to the peripheral portion of the substrate from the etching liquid supplying mechanism while the substrate rotated by the substrate rotating mechanism, see abstract teaches spin etching wherein the work holder 10 rotates.

Regarding claim 7: The substrate processing apparatus according to Claim 1 wherein: the annular member 20 includes a substrate-opposing surface that extends outwards from the inner periphery and opposes the surface of the peripheral portion of the substrate .

Regarding claim 8: The substrate processing apparatus according to Claim 7 wherein: the substrate-opposing surface is a plane nearly parallel the surface of the peripheral portion of the substrate, see Figs. 1,4, and 7 of Koichi et al.

Regarding claim 9: The substrate processing apparatus according to Claim 7 wherein: the substrate-opposing surface is an inclined plane inclined to reduce an interval between the substrate-opposing surface and the substrate as heading toward the inner periphery, see Fig.7.

Regarding claim 10: The substrate processing apparatus according to Claim 7, wherein: an outer periphery of the substrate-opposing surface is located outside the outer periphery of the substrate, this limitation of this claim has been made relative to a size of substrate. Note that the apparatus is what it is and not what it does and that the inclusion of material or article worked upon by a structure being claimed does not impart patentability to the claims, see *In re Young*, 75 F. 2d 966, 25 USPQ 69 (CCPA 1935) (as restated in *In re Oto*, 312 F. 2d 937, 136 USPQ 458, 459 (CCPA 1963)).

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Regarding claim 11: The substrate processing apparatus according to Claim 7, wherein: the annular member includes a projection that protrudes from the substrate-opposing surface toward the substrate and thereby limits the etching liquid heading toward an inside of the substrate, see Fig. 7.

Regarding claim 17: Claim 1, wherein: the etching liquid supplying mechanism includes a nozzle (nozzles 12a-d and nozzles 13a-d) that supplies the etching liquid toward a surface of the substrate on an opposite side to a surface containing the surface of the peripheral portion.

Regarding claim 18: The substrate processing the nozzle supplies the etching liquid toward a central portion of the surface on the opposite side, (nozzles 12a-d and nozzles 13a-d), Fig. 4.

Regarding claim 19: The substrate processing apparatus according claim 1, wherein: the annular member has an outer wall surface positioned inside the outer periphery of the substrate, see Figs. 7 and 8.

Regarding claim 22: The substrate processing claim 1, wherein: apparatus according to the etching liquid supplying mechanism includes a dispense port (nozzles are provided to supply fluid from in a direction perpendicular to the direction of the substrate see Fig. 1 nozzles 12a-d and 13a,b) through which the etching liquid is dispensed direction perpendicular to a surface of the substrate direction inclined toward an outside of the substrate.

Regarding claim 23: The substrate processing claim 1, wherein: apparatus according the annular member (seal ring 20) includes an inner wall surface that in a direction to go away from rises from the inner periphery surface of the substrate, see Figs. 7 and 8.

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Regarding claim 25: The substrate processing apparatus according to claim 1, further comprising a lid member (seal holder 21) that substantially clogs an internal space of the annular member.

Regarding claim 27: The substrate processing apparatus according to claim 1, further comprising: a gas supplying mechanism that supplies an internal space the annular member with a gas, see Fig. 1 and discussed in the abstract describing the use of nitrogen gas.

Regarding claim 30: The substrate processing apparatus according to claim 1 further comprising: a protection liquid etching protection liquid (water through nozzles 13 a-d) toward a center of the substrate an inner side of the annular member, supplying mechanism that supplies etching protection liquid toward a center a center of the substrate at an inner side of the annular member, see Fig. 1.

Regarding claim 61: The annular member of Koichi provides seal ring 20 that is shaped as a continuous ring in that encircles the wafer without disruption in structure from another member.

Regarding claims 62-64: The inner periphery is disposed inside the outer periphery of the substrate see the location of the annular member 20 relative to the substrate 300.

### ***Conclusion***

**7.THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a) as necessitated by the addition of claims 61-64 and the introduction of IDS dated 12/26/2006.

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**

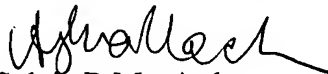
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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sylvia R. MacArthur whose telephone number is 571-272-1438. The examiner can normally be reached on M-F during the hours of 8:30 a.m. and 5 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Sylvia R MacArthur  
Patent Examiner  
Art Unit 1763

January 24, 2007